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THE SOCIAL SERVICE OF PUBLIC SCHOOLS AS INDICATED BY THE RESULTS OF A STUDY OF A TYPICAL COMMUNITY

JAMES H. RISLEY
Owensboro, Ky.

Much has been said and written of late on the alleged defects prevalent in our public schools which prevent them from being of the greatest possible usefulness to the social groups which they are designed to serve. It has been claimed that they are undemocratic, furnishing, especially in their higher courses, a training fitted only for a few, and that the greater number of students drop out before they have finished their courses and begin work for which they have had little direct preparation.

This study was undertaken with a view of finding out, if possible, just how much schooling a typical body of citizens have had and what correlation, if any, exists between the number of years they have attended school and their financial success. It was the further design of the study to see whether these people had any well-defined idea concerning the value of their own training and its efficiency in helping them to adjust themselves to their environment.

METHOD OF THE INVESTIGATION

The city studied was Owensboro, Kentucky, a manufacturing city of 20,000 inhabitants and surrounded by a fine agricultural community. A questionnaire was prepared, and sent out by school children so that it fell into the hands of citizens in all parts of the city and surrounding country districts.

The following form was used:

Name..... Address..... Occupation.....
How long did you attend school?..... When?.....
Are you a college graduate?..... High-school graduate?.....
What subjects did you study in school?.....
Which of these do you think have been of most real value to you? (mention others besides the three R's)..... Why?.....
Are there any subjects that have been of little or no value to you? ..... Why?.....
If you could begin your school work over again, what changes would you like to have made in school courses or methods?.....

This questionnaire was supplemented by personal interviews, and altogether answers were secured from a thousand people representative of all classes, trades, and professions, and may be considered as coming from sources which will fairly represent the entire citizenship.

After gathering in the material, an attempt was made to classify the respondents according to their salaries or incomes from labor. This was accomplished, in the case of some six hundred individuals, with a fair degree of accuracy, with the help of a number of different persons well acquainted in the community and competent to form estimates of the earning capacity of the people. Inquiry was also made of merchants, foremen, and managers about the wages of employees.

Table 1 affords a complete summary of the facts relative to this six hundred people with regard both to years of schooling and to salaries received. The numbers on the left of the table represent the years of school attendance, those on the right the total number attending. Figures at the top represent salaries or incomes from work, while those at the bottom represent the numbers receiving such salaries, and the percentage of the whole number each group represents. A perusal of this table alone will indicate a correlation between school attendance and amount received as salary or income, and it becomes more apparent by a study of the accompanying charts.

Chart 1 shows the distribution of the entire 1,000 according to years of school attendance. It appears that .8 per cent of the whole number attended school one year; 1.2 per cent 2 years;

TABLE I

SHOWING RELATION BETWEEN SCHOOL ATTENDANCE AND EARNING CAPACITY

Period of School Attendance	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2500	3000	4000	5000	6000	8000	Total
1	3	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5
2	2	2	...	6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	10
3	3	2	2	7	...	...	6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	20
4	...	2	1	15	17	2	5	2	...	...	4	...	...	...	3	...	...	2	...	...	...	...	...	...	...	...	53
5	...	6	9	12	18	10	5	15	4	4	4	...	3	...	2	...	...	...	...	...	...	...	...	...	...	...	92
6	...	5	4	10	20	6	2	14	11	2	4	5	...	...	...	...	...	...	...	...	...	2	...	...	...	...	85
7	...	1	7	1	20	4	...	9	...	...	2	...	2	4	...	1	...	...	...	...	...	...	1	...	...	...	52
8	...	...	...	7	12	14	...	9	...	12	4	8	...	2	...	1	1	2	...	3	2	1	1	...	2	1	82
9	...	...	...	...	3	1	2	7	...	6	...	6	...	4	9	2	...	...	...	2	...	1	2	...	...	...	45
10	...	...	2	...	...	3	...	...	7	2	1	4	4	1	3	...	3	2	1	2	1	...	1	...	...	...	37
11	...	...	1	...	...	4	...	...	4	...	...	...	3	3	5	2	2	...	1	...	...	...	...	2	...	...	27
12	...	...	...	14	...	...	4	...	...	1	...	8	...	4	...	...	2	...	1	2	3	2	2	...	2	...	45
13	...	...	...	8	...	...	...	...	2	...	...	2	...	...	2	1	...	...	...	...	...	1	...	...	...	...	16
14	...	...	1	...	...	...	...	2	...	...	2	...	...	...	1	...	...	3	1	1	2	...	...	2	...	...	15
15	...	...	...	...	...	2	...	...	...	...	...	...	1	...	1	1	...	...	...	...	...	2	...	...	...	...	7
16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	2	...	...	...	3
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	2
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	2
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	2
Total	8	20	27	80	90	46	24	58	28	27	21	33	13	18	28	8	8	12	4	12	8	9	9	4	4	1	
Percentage	1.3	3.3	4.5	13.3	15	7.7	4	9.7	4.7	4.5	3.5	5.5	2.2	3	4.7	1.3	1.3	2	.6	2	1.3	1.5	1.5	.6	.6	.1	

3 per cent 3 years; 10.5 per cent 4 years; 17.5 per cent 5 years; 12.6 per cent 6 years, etc., the number gradually decreasing to 20 years, where we find only 2 per cent. The highest point in

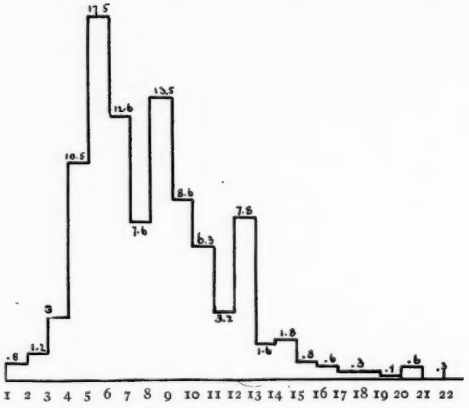

CHART 1.—Distribution of 1,000 according to years' attendance

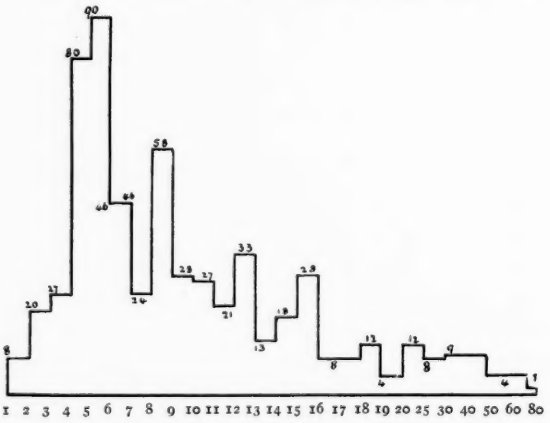

CHART 2.—Distribution of 600 according to salaries or incomes

the curve is at 5 years, which probably represents the average amount of schooling a majority of people have had.

Chart 2 shows the distribution of the 600 of whom estimates could be made according to salaries or incomes. Here

the curve reaches its highest point at $500. The chart divided into thirds would show the first third receiving $500 or less, the second, from $500 to $1,000, the third over $1,000.

Chart 3 shows the distribution of the 600 of Chart 2 according to years of schooling, and the general similarity of outline is at once apparent. Dividing it into thirds we find the first group to be composed of those who have attended school five

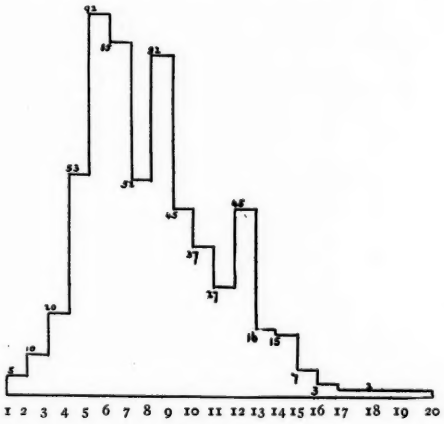

CHART 3.—Distribution (600 of Chart 2) according to years in school

years or less, the second from five to eight, and the third more than eight years.

In Chart 4 the correlation between salaries and years of attendance is set forth still more plainly. The figures at the base represent the years of school attendance, while the blocks represent salaries or incomes. Lines from upper left to lower right represent the groups receiving $500 or less; lines from upper right to lower left, those receiving from $500 to $1,000; anl blank spaces, those who earn over $1,000. Dividing the chart into thirds we find that of all those in the first group, only 18 make over $1,000 as compared with 49 in the middle group and 123 in the third group. Of those making from $500 to $1,000, the first third of the chart contains 53.

the second, 83, the third, 47. This shows a preponderance of those who are of the middle group in attendance to belong to the middle group in salaries also. By actual count we find

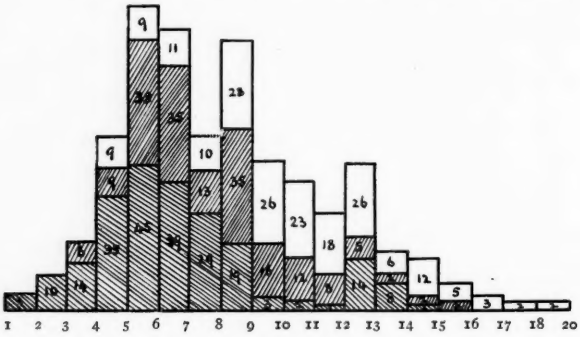

CHART 4.—Oblique lines from upper left to lower right indicate the number receiving $500 or less; lines from upper right to lower left, those receiving from $500 to $1,000; the blank space, those receiving over $1,000.

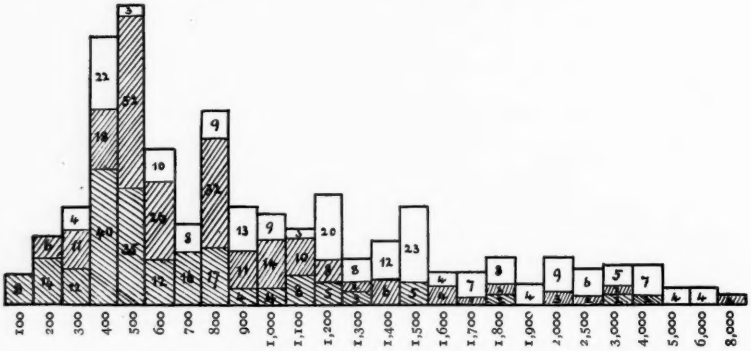

CHART 5.—Oblique lines from upper left to lower right indicate the number attending school five years or less; lines from upper right to lower left, those attending from five to eight years; the blank spaces, those who attended over eight years.

that 317 of the whole number fall into the same groups or divisions in salaries as in years of school attendance.

This same co-ordination is brought out in Chart 5, where the numbers at the bast line represent salaries, while the blocks represent years of schooling. Here in the first group 29 have

gone to school over 8 years, while in the second group there are 49, and in the third group 125.

There is a noticeably large number of those who attended school from ten to twelve years in the first group with those who earn $400 or $500. This lack of correlation comes from the fact that there were a number of grade teachers in the list, a class of public servants the most shamefully underpaid of all trades or professions, when the amount of preparation expected of them is taken into consideration. Some further lack of correlation may be explained by the fact that there are numbers of young men just out of college or high school who have not yet had an opportunity to get themselves properly adjusted and make their value known to the world. Some young men start out with financial backing or the influence of prominent relatives and their success comes early; while others who have even better preparation must secure recognition by slow and laborious process extending through many years. Thus in order to explain fully the lack of co-ordination which these charts show, we would have to enter into the history of the individuals of the non-co-ordinating groups and study them in relation to age, family, environment, and all other hindrances or helps to human progress. This would clearly be an impossible task. It is sufficient for our study that our statistics represent some general degree of correlation. The facts set forth in this study agree in the main with the conclusion of Mr. Staples, who made a similar study at Lake Geneva, Wisconsin (see *Elementary School Teacher*, February, 1910).

As to the value these people themselves place upon the training they have received, the relative value of subjects pursued, and what changes they think should be made, the summaries of answers will show. The two questions as to the relative value of subjects brought out a great diversity of opinion. The following table gives the list of subjects occurring with greatest frequency in the answers, the first column of figures being the number of respondents considering them of most value, the second column being the number who have found the same subject of no value to them:

Subject	Most Value	No Value
English	25	—
Literature	36	—
English grammar	90	2
Rhetoric	15	1
Spelling	86	—
Commercial branches	55	1
Algebra	20	23
Geometry	25	10
Language	13	—
Latin	24	20
History	51	9
Physiology and hygiene	17	9
Geography	28	4
Psychology	11	—

In addition the following subjects were mentioned, none more frequently than six times: Greek, German, chemistry, botany, geology, natural philosophy, elocution, vocal music, pedagogy, drawing, ethics, and civics.

The following additional subjects were voted of little or no value by six or less of the respondents: German, Hebrew, French, Greek, trigonometry, physics, chemistry, botany, zoölogy, astronomy, geology, political economy, civics, music, and drawing.

When it comes to the question as to what change the respondents would like to see made, the opinions vary still more widely. Ten say that they prefer the courses and methods of the past, while fifty think that present courses and methods are good enough. The other respondents fall into several groups.

1. Those who think more stress should be placed upon certain subjects. There is little agreement as to what subjects these should be, the following being the chief subjects mentioned, with the number of votes for each:

Laboratory work in science	15
Drawing	15
Music	12
Latin	9
Spelling	9
English	9

The rest of the respondents mention a variety of subjects. none of which are mentioned more than six times. They are as follows: Penmanship, mathematics, arithmetic, reading, literature, debating, grammar, elocution, physiology, chemistry, botany, zoölogy, geography, social science, German, Greek, French, and history.

2. A second group would make certain eliminations, the most frequent suggestion being the elimination of examinations. Others mention "fairy tales," frequent textbook changes, and school amusements, while a few select certain subjects for elimination, the chief being Latin, Greek, and algebra.

3. Certain subjects not yet introduced into these schools are demanded by a third group. Here we find something on which there is more agreement. The chief suggestions are as follows: Introduce thorough courses in

Domestic science	75
Manual training	69
Physical culture	40
Agriculture	15
Vocational training	30
The Bible, religious and moral instruction	21

4. Another group confines answers to miscellaneous suggestions, the following being the suggestions of greatest frequency:

More intensive work in fundamental subjects	35
Better training for teachers	20
Longer lunch period	30
Smaller classes	10
More study in school	9
Shorter school hours	8
Smaller classes	10
Begin language in lower grades	8
Have better libraries	10
Give more attention to individual pupils	12

In addition, the following suggestions occurred, none of which were mentioned by more than six respondents: More extensive work, better grading, better facilities for college preparation, stricter discipline, better understanding between teachers and pupils, two years in eighth grade, more home study, separate

courses for boys and girls, better training of memory, better training of the senses, more election in the high school, stricter attendance laws, longer recess periods, uniform dress for students, open school with prayer, more male teachers, concrete methods, less expensive high schools and more money for the grades, separate classes for dull students.

The above summaries speak for themselves and need very little comment. Of the subjects regarded as of greatest value, the English group is the favorite with a total of 254 votes; 44 favor language, and it is noticeable that Latin, which a number of modern educators would have us eliminate from the curriculum, is still a favorite among those who have studied it. Two reasons are expressed for this preference, one the formal discipline idea and the other the more practical one of greater facility in the use of the mother tongue. One man, who is an expert accountant, affirmed the formal discipline doctrine in most emphatic terms. He affirmed that Latin and Greek had given him greater strength for the accomplishment of the intricate and puzzling tasks which fell to him than all other subjects combined.

Then 55 place commercial subjects first on the list, giving direct utility as the reason for their preference. In fact, the notion of utility is prevalent in all answers as to relative values. The fact that knowledge of a subject can actually be made to accomplish something which will aid them to master the difficulties of their work is the criterion of value in the minds of a very large majority of these people.

When it comes to opinions as to which subjects were of little or no value, we find many answers tending to neutralize the statements of greatest value, a proof that a subject may appear to be of very great value to one person but worthless to another. There are reasons for this. A subject may have been studied so short a time as to preclude any positive measure of value, and this fact will explain a great many statements found in these answers. Again, the subject may have been so poorly taught that the student has failed to get anything of value from it.

Two hundred and fifty-six, or about one-third of the respondents, express the belief that every subject pursued has been of

value to them. Of the rest, 37 place little value on the language group, the largest number naming Latin as the subject of least value. Thus it appears that no school system or curriculum could be established by popular vote if it depended on a large number of people agreeing on any one subject. The votes tend rather to neutralize each other.

When we come to the question as to changes in subject-matter or curriculum, we find the same variance of opinion. Ten of the respondents would advocate a return to the system of the past as it existed when they were in school. Fifty express themselves as being well satisfied with the schools as they exist at present. Many would like more intensive work on fundamental subjects, a few would have more extensive work. Some would like more work or better work in a variety of different subjects. Others would eliminate those same subjects from the curriculum. There was the greatest unanimity in the desire for courses in manual training and domestic economy, 69 mentioning the former and 75 the latter. Fifteen would have courses in agriculture, 21 some sort of religious instruction, 30 vocational training, and 40 physical training. Thus, while it has been shown that people who have made any considerable study of Latin and Greek and other subjects of the traditional curriculum have still a preference for those subjects, it is true that there is a decided leaning toward the newer groups of subjects which aim at a more immediate adjustment to the affairs of ordinary life. People have not stopped to think very seriously as yet what has been of most service to them in the education of the past, but in this turning toward the practical we see evidence of the awakening of a universal popular demand that education shall be for service and that there shall be a closer correlation than ever between the amount of school training and the social efficiency and economic success of the individual.

To sum up the conclusions of this discussion: Approximately one-third of the people have attended school five years or less, one-third from five to eight, one-third over eight years.

A correlation has been shown to exist between the number

of years spent in school and the earning power of the individuals. Where this correlation does not appear, it is often due to exceptionally low rates of wages paid to certain well-educated classes. Eliminate these classes from the study and the correlation would appear to be very much closer.

There is no well-defined general opinion among the people as to the relative value of the subjects they have pursued. Such opinions as are given base their claims on the doctrine of formal discipline or direct utility, chiefly the latter. On the whole, the opinions are so much at variance as to make it clear that public opinion could not be taken as a safe guide in making a school curriculum.

The one subject on which there is the greatest agreement is the demand for more attention to the newer groups of subjects which aim at a closer correlation between the work of the school and the practical life of the individual in his social environment.

THE EVOLUTION OF AIM AND METHOD IN THE TEACHING OF NATURE-STUDY IN THE COMMON SCHOOLS OF THE UNITED STATES (*Concluded*)

IRA BENTON MEYERS
School of Education, The University of Chicago

In 1845, in the higher schools the idea of study for the sake of discipline became a prominent factor in the work, and science, especially botany, held its place because of its disciplinary value. In the elementary schools all organized attempts to teach natural history practically died out. In the meantime geography had gained considerable headway and the description of landscape, plants, and animals as incorporated in this study was considered ample natural history for the elementary schools. School work settled down to a study routine in which anyone who could handle the system, diagram, work all of the sums, and keep order was ready to teach. Against the character and content of this type of work in elementary schools people soon began to complain. Both Gray and Agassiz, the recognized leaders of their respective sciences, raised their voices in protest. Gray said:

> I do not suppose that the mere treasuring up of facts will effect the object of education. . . . . I venture the assertion that, if the truth were known, the child acquires a greater number of useful ideas, more real development and strength of mind, during his play hours with his rabbits, his kites, from his story books, than from the lessons assigned him during his hours of study; he is really educated more out of school than in school.

By the early fifties a new movement was attempted and a strong plea made for a return to a freer out-of-door study of nature from the standpoint of the child's interests. The movement in America seems to have been stimulated by the work of the Prussian schools and its spirit is fairly stated by Raumer:

> I will state the method which the student should follow: He should first examine in all directions the neighborhood of his residence and should make himself so thoroughly familiar with it that he can call up before his

mind whatever he chooses. Such an acquaintance is the result of the unconscious and fresh pleasures which youth, joyful and free from scientific anxieties, will find for itself in such an examination, obtaining in this artless way a simple, general impression of the vicinity not forced by the teacher. He is not teased while rejoicing in the blue heavens and the rapid motion of the clouds, in the oak woods, and flowery meadows, where the butterflies play, by a professor with a kianometer to measure the blue of the sky, nor by recommendations not to stare in the woods but rather to ascertain whether the oaks are *Quercus rubra* or *alba;* or, not to look at the flowers all at once as if they were a yellow carpet but to take his Linnaeus and determine the species of *Ranunculus.* No entomologist is setting him to chase butterflies and to impale them. . . . . In this paradisaic pleasure is planted the seed of the perception of an intellectual world, whose secrets will not be fully ascertained and understood even after the longest and most active life of scientific effort. But most teachers, by the dispersion of these simple impressions of nature, destroy these earlier impressions of children and the brightness of the imaginary world which they see.

This second movement for a return to nature from the standpoint of children's interest had made but little headway when it was intercepted by another and stronger movement. Two ideas had grown up in school work, both at home and abroad, and become associated with nature teaching. One was that of mental discipline, already prominent in the science work of the higher schools; the other, that of acquiring practical or useful information, some knowledge of the natural and manufactured objects met and used in everyday life. The first idea gave rise to a type of teaching termed "object-lessons," the primary purpose of which was sense-training, mental exercise, and discipline. It called for a complete and detailed analysis of an object to insure complete observation and accurate judgment. Its advocates believed that the end, mental discipline, could be most effectively attained through an intensive study of a few type objects. The second idea gave rise to a type of instruction termed, "Lessons on Common Things," and was intended to give children information on common materials and phenomena about them from the standpoint of meaning, their use to man, and something of the processes by which they are rendered useful. So far as relates to any natural history in the common schools

these two types of work held and dominated the field during the succeeding thirty years (1860–90).

The conflict brought on by the growth of the idea of organic evolution was a strong factor in silencing any plea for a return to pure natural-history study in the common schools. "Its enemies are those who are sneering at 'bugology' or who lift their hands in pious horror because some bold speculator or lover of notoriety thinks geology contradicts the Bible." It was only when organic evolution had gained a stronghold in the minds of the more liberal thinking public that a return to a study of nature, from the standpoint of the child's interests in nature, could be attempted. Taking a glimpse at the higher schools and academies during this period, botany in the form of plant analysis and textbook memorization still held sway. A little before the middle of the period, under the masterful guidance and leadership of Huxley and his followers, as well as on account of the rapid growth in biological knowledge, zoölogy began to gain prominence in the more progressive schools. Up to this period the school work in zoölogy was of the strictly natural-history type.

In 1872 Huxley remarked:

> Certain broad laws of biology have a general application throughout the animal and plant world, but the ground common to these kingdoms of nature is not of very wide extent, and the multiplicity of details so great that the student of living beings finds himself obliged to devote his attention to one or the other.

This marks the first distinct step toward specialized study. To this Huxley added the remark which gave direction to this work for the succeeding sixteen years:

> My own impression is that the best model for all kinds of training in physical science is that afforded by the methods of the study of anatomy in the medical schools.

It is not necessary to point out that the study has made a direct shift in the schools from the viewpoint of the educator to that of the specialist in a particular subject. The pupil is now treated in his class work exactly as he would be if he were preparing himself as a specialist in zoölogy, except that he shall

stop the study with the job half completed. On the other hand it was assumed that under the influence of this work, as carried on, the aims of the educator, interest, discipline, character, moral culture, would follow as a matter of course; and educational discussions turned to a discussion of the relations of science to "discipline," to "moral culture," to "character-building," etc. Natural-history types of work quite wholly disappeared from the schools and specialized types of work took their place. Pupils analyzed, observed, dissected, not from any impulse of intense individual interest but because the laboratory manual so directed. This work reached its culmination in Huxley and Martin's *Practical Biology*.

In the beginning stages of the work classification was the foundation upon which the work was based; later morphological work became the prominent factor, especially in zoölogy, and classification was transferred to the back of the book, the argument being that children should first have something to classify. The work in the sciences, as well as the "object-lessons" and "lessons on common things," in the elementary schools had just reached perfection in organization of subject-matter, perfect text-books had been written, and the schools were well settled to their routine work, when the complaint began again to grow that "science and object-lessons as taught are becoming a grind and destroying the children's instinctive interests in natural objects and phenomena."

The late seventies and early eighties stand out as a transition period during which elementary science and object-lessons made up the bulk of the nature-teaching in the schools, but enthusiasm was on the wane, there was a growing remonstrance against the type of work carried on in both schools, and centers of work of a new character were forming in various localities. Under the influence of the teachings of Pestalozzi and his followers the feeling that the child's education should deal more with things, from the standpoint of his interest, and less with books, had been kept alive and gained considerable headway, notwithstanding that object-lesson teaching had proved that the study of things could become as formal a process in learning

as the textbook when things were not considered from the standpoint of the pupils' interests. From the other side had come the growing influence of science, convincing the people that it held something better than routine analysis and classification.

As might be expected the better elements of both took a prominent part in the movement now in its formative stage. This movement was distinctly an American movement, brought on by American school conditions; whereas previous movements were made up largely of elements borrowed from foreign countries and applied to American conditions. Three of the centers in this new movement are cited as typical of the influences which entered into it.

One of these centers is represented by the work of Alpheus Hyatt and Lucretia Crocker around Boston. Professor Hyatt was a student and follower of Agassiz and his work partook of the point of view of science. The character of this work is well represented in his *Guides for Science Teaching* (1878). I am inclined to believe that had the elementary schools, during this earlier period held to the spirit of Agassiz' teachings they would have accomplished far more in their work.

At about this same time (1877–78) Dr. W. T. Harris was trying out a course in elementary science in the schools of St. Louis. In his introductory remarks to the teacher he says: "The course is arranged with reference to method rather than quantity and exhaustiveness." He thought out the course as progressing spirally: plant life in the first grade, animal life in the second grade, physical elements and mechanical powers in the third grade, coming around to botany again in the fourth grade. Referring to botany he says:

> If only one topic is thoroughly discussed in each quarter of the year some very important ideas will be gained of the science of botany. In the fourth year the student will come round to the subject again and can deepen his insight into the methods of studying the world of plants, learn the general outline of classification, and train his observing powers.

It is evident that Dr. Harris had in mind, as the aim in the work, discipline and preparation for science. At the third level

of the rounding of the spiral these more general topics merge into the more general elementary sciences: in the sixth grade, into elementary physics and astronomy; in the seventh grade, physical geography; and in the eighth grade, natural philosophy.

In the meantime Professor H. H. Straight was developing a type of work in the Oswego normal school (1878–82).[1] Professor Straight was a student under Agassiz and was well grounded in the sciences. On the other side he had become greatly influenced by the teachings of Pestalozzi, and in his work he blended in an admirable way these two points of view. I consider that this work, more than any other, represented in spirit and practice this new nature-study movement. Similar types of work were advocated and carried on in other localities, among which may be mentioned the work of Boyden in Plymouth Co., Mass., Payne in Pennsylvania, Ford at Kirksville, Mo., Howe at Chicago, etc. But, so far as I have been able to analyze the situation, no new elements entered into any of these other centers.

During the late eighties Professor Wilbur S. Jackman had been studying the science-teaching problem as related to high-school work; he had outlined a course of study which he asked, and was granted, permission to carry out in the Central High School of Pittsburgh. Before the course went into effect he was called to the Cook County Normal School to take up the work interrupted by the death of Professor Straight. With the work of Professor Straight to open the way, under the leadership of Colonel Parker and with a broad, sympathetic, liberal, thinking mind of his own, the outlook was for strong and effective work.

Up to this period (1891) the thing lacking to fuse this new work into one great movement was a good textbook or guide for teachers. Numerous outlines had appeared in educational journals and in pamphlet form, but they were scattered and showed little unity of opinion. In the latter part of the year Mr. Jackman issued his *Nature-Study*. The time for a book was never more ripe; no book ever met so directly the spirit of the

[1] He was called to Cook County Normal School, 1883–85.

movement which it represented, and yet it proved a sore disappointment to teachers. It met the teachers unprepared, it treated of outlook, of purpose, of methods of setting to work with the children, of what was best to do and how to do it; but alas, it failed to tell the teacher what the results would be after she had done the work, it failed to give the answer to the questions asked. For a quarter of a century the schools had preached "study things and not books," had handled and taught from objects in both science and object-lessons, under the impression that they were studying things, and when the students of the system were put to the test it was found, *en masse,* to have been dead formalism. That the proper doing of a thing would furnish the answer, that if it did not it was because the method of the doing was wrong, and needed correction, did not occur to the school world. It made little difference what the nature of the activity was, or the incentive under which carried on, it was *an* answer that was wanted and as stated by a supervisor of nature-study, "I don't need a book that asks questions, I want one that contains answers." The book indicated a direct return to the original and ever-recurring idea of bringing children into direct contact with the whole of their nature environment from the standpoint of their own interests in nature. The underlying idea was no longer that of the "Wonders of Creation," but the writer states:

> The spirit of nature-study demands that children shall be intelligently directed in an investigation of their nature environment; that there shall be, under the natural stimulus of the desire to know, a constant effort at a rational interpretation of the common things observed.

Mr. Jackman doubtless believed that the work adequately carried out would usher the grade pupil, well prepared in spirit, subject-matter, and methods of work, into the sciences of the high school. The movement during the next fifteen years (1890–1905) affords an interesting study in which to trace out the influences which have side-tracked true ideals in elementary education, in order to make room for special interests.

The absence of information in Mr. Jackman's book was remedied two years later (1894) by Howe's *Systematic Science Teaching.* In method this book should have preceded Mr. Jack-

man's, since it shows clearly a direct transition from object-teaching; in another respect that it should follow was the proper procedure. It covers the whole range of the nature environment, starts from the standpoint of children's interests, tells the teacher what to do and how to do it, but gives sufficient running information to relieve the teacher of the necessity to find out anything for herself in the way of original observation and inference.

In the meantime there grew up a general feeling that—

> Nothing appeals so strongly to the young child as life, and when associated with color and movement the appeal is almost irresistible. Change in weather, the formation and nature of soil, minerals and rocks, the effects of erosion and a host of other phenomena of great interest makes no such an appeal, does not enter so apparently and directly into child life, and can be left with safety until a later school period.

Suiting the book to the occasion we have (1898) Lange's *Handbook of Nature-Study*. It treats of plant and animal life only, reduces directions to the teacher to a minimum, except a few fine-print directions on securing materials, and fills the body of the book with a more or less complete description of individual plants and animals. The book doubtless met the demands of teachers, but that the trend is toward dead formalism is clearly indicated.

With the trend of teaching toward a study of plant and animal life, teachers found that they could secure better attention, more interest, if the work in hand assumed story form, and made an appeal to the emotional, rather than the intellectual, side of child life. At the same time there grew up a feeling that nature-study of a more primitive type, myth, folklore, as well as story, was what the child needed; and the movement took a turn in this direction. At the same time numerous excellent stories, attractive to children and adults alike, appeared and a period of story reading and telling was established. The situation was somewhat saved by the timely appearance of Hodge's *Nature-Study and Life* (1901). This book held to the plant and animal phase and recognized feelings and sentiments as powerful factors in elementary education, and approached the study from a humanistic

and economic standpoint. The book is too recent and well known to require description. Its great strength was in influencing teachers to develop the personal-interest-in-nature side of the child. To have pets, grow plants, make gardens, encourage wild bird life, use aquarium and insect houses in study of animal life, and to encourage children, and to give them opportunity to put more of themselves into the work. He did not make the mistake of Mr. Jackman in believing that the teacher should be able to go it alone, but filled in ample, excellent text as well as furnished liberally excellent references.

It is of interest to note how, in all of these movements, the popular teaching mind seizes upon some one prominent factor, pampers it, nourishes it, accentuates it until it completely dominates and distorts the situation; whereas had it been treated in a normal way, held in proper association with other equally important ideas, the whole would have exerted a pleasant, wholesome, broadening educational influence upon child life. But in the present instance the emotional stood in the forefront, caught the attention of teachers, and animal stories became the rage of the season. We were getting children into sympathetic touch with nature with a vengeance, but it was a world of nature as revealed through human fancy and not through observation and scientific research. Had we stuck to animals, observed them to see whether they verified the stories, the results might have been most profitable, but such observation spoiled the story. We had so far outstripped nature that the story was more interesting to the child than the living animal itself. Further, because of the reaction due to the overdoing of a good thing, I found parents and teachers asking whether children should be allowed to read books like Thompson-Seton's and Long's. Should a child be allowed occasionally to have a lump of sugar?

The work on the whole was beginning to generate doubt in the minds of people, and a feeling was developing that all of this work, if carried on at all in the elementary schools, should be grouped under the head of elementary science and taught in harmony with scientific method. This feeling was furthered

by numerous criticisms on results as observed in nature-study teaching of which the criticism of Professor Armstrong in the *Moseley Educational Commission Report* (1904) is typical:

> The Nature-Study lessons I witnessed, when not specifically botanical or zoölogical and scientific in character, were eminently superficial and worthless.[2]

Up to this date there had been no co-operative effort on the part of advocates of nature-study and little attempt to define, in any broad and comprehensive way, the fundamentals of nature-study; to determine what it really is, its scope, and the character of the work which it should attempt to do. At this crisis in the situation, when people began to say that the work was "in bad repute," when eminent educators contended that it was "a dangerous fad," Professor M. A. Bigelow came to its rescue in founding the *Nature-Study Review,* secured, from various parts of the United States and Canada, through a symposium, the opinion of various people as to the nature, aim, scope, and purpose of the study, thus placing it again squarely before the teaching public and setting up anew a starting-point in nature-study. The outlook into this present epoch is so clearly defined in the editor's introduction of the *Nature-Study Review* and in his editorial to the symposium[3] that there is no need of a restatement here. It is sufficient to say that it represented a return to the idea of an approach to the whole of the nature environment, biological and physical, industrial as well as pure science, from the standpoint of the child's interest in nature.

SUMMARY

In reviewing the history of nature-study teaching in the schools, from the standpoint of aim and method, some interesting facts were revealed. One of these facts was the constant shift in point of view. It was perfectly clear, throughout the entire period covered, that the main cause of the shift in viewpoint was due to a lack of any definite goal toward which the teacher felt the work was headed; and of any definite standards

[2] See McMurry, "Advisable Omissions from the Elementary Curriculum," *Educational Review,* XXVII, 478–93 (May, 1904).

[3] *Nature-Study Review,* I, No. 1 (January, 1905).

except the most artificial, by which they could measure the degree of their success in the same manner as can the contractor, the merchant, the lawyer, the doctor, and other business and professional people of the world.

Again, it was made plain that the educational point of view of the elementary teacher and the point of view of the specialist in subject-matter are entirely different in type and content. The textbooks used in the schools were written by specialists in subject-matter and from the specialist's viewpoint in which the fundamental aim was that of mastering the subject. In every instance, regardless of the educational outlook of the teacher, her aim came under the dominating influence of the specialist, and this meant a shift from using the subject as a means to that of making it an end.

A still more striking fact which was clearly revealed in each movement was that in every period when the movement was in its formative stage the real educational results were of better quality than at any later stage in the period. In the beginning stages the subject-matter was poorly organized and looked upon with deep distrust by the specialist. On the other hand, as the period advanced subject-matter became better organized, more easily available to the teacher, more complete textbooks appeared, and the subject grew into the good graces of the specialists only to receive the condemnation of the educator. In other words, though it sounds like a paradox, the educational results were always most satisfactory at that stage when the work seemed jumbled and undefined, and least satisfactory when worked out into a well-organized system. At the unorganized, bookless stage the teacher was thrown upon her own resources, and although the work was frequently crude, it bore the stamp of personal effort, and contained an element of personality which is always needed to impart freshness to school work, whereas in the later stages where the teacher relied upon a textbook, this personal effort, and the vigor and freshness which goes with it were almost wholly lacking—the teacher and the work both were lifeless.

Again it was perfectly clear that teachers have little or no

notion of the special need of having children linger and loiter, without lagging, in an interesting way, for a considerable time with various objects and situations before attempting to use them in class discussion. It is this element of lingering with things that makes pets, potted plants, insect cages, aquaria, school gardens, and a host of other types of work interesting and profitable if rightly conducted.

Again, it was perfectly clear that people failed to appreciate, and fail to appreciate the fact at the present day, that it is impossible to train teachers in our normals and universities through a system of textbooks and libraries and expect them to go forth and do strong, vigorous, active, original work with children; working from the standpoint of children's interest when they have never worked from the standpoint of their own instinctive interests.

Again, one could not escape the fact, in searching out the story of nature-study teaching, that in all stages there were in various nooks and corners, working seemingly apart, attracting little or no attention, numerous quiet, self-sufficient, clear-sighted, sympathetic teachers, in touch with the children, generating and absorbing into the school work the interests of the children, and gaining from them vigorous and intelligent response. It is perfectly clear that the central ideas embodied in nature-teaching from the beginning, and which have rejuvenated it from time to time, namely an approach to the whole of the nature environment from the standpoint of the children's interests in nature, is as strong at the present day as at any past period, and that failure to realize the purpose, during a century of struggle, has been due to a misconception of the real aim of education and of the normal processes in learning.

A COMPARATIVE STUDY OF THE RESULTS OBTAINED IN INSTRUCTION IN THE "SINGLE TEACHER" RURAL SCHOOLS AND THE GRADED TOWN SCHOOLS[1]

W. S. SMILEY
State University of Iowa

In the rural sections of this country there has recently been considerable agitation for the consolidation of a number of the smaller school districts into one large district. With one commodious schoolhouse, several teachers, and a large number of children transported at public expense to a central school, it has been possible to adopt the grade system. This method of organization is considered an advantage by some, but by others it is held to be a detriment to successful learning. This study is an effort to gather data which will measure the contribution of grade organization to elementary education. No amount of opinion can solve the problem, and even this investigation can hope only to point out a method by which material may be gathered and presented. Aside from its contribution to the methods and results of "experimental education," this study indicates some of the weaknesses of our school organization and thus suggests a departure from the conventional form of organization for our consolidated rural schools.

The method used is a comparison of the "single teacher" rural schools with a number of graded town schools. This method was feasible because in the two systems there was only one factor that was not common to both, and that was the

[1] The writer is indebted to County Superintendents D. E. Brainard, F. L. Hoffman, G. E. Farrell, A. M. Deyoe, C. H. Miller, Estelle Coon, A. L. Heminger, and H. McVicker; to City Superintendents C. R. Golly, A. C. Grubb, W. R. Merriss, F. P. Reed, F. W. Malke, H. S. Dewelle, E. M. Carson, C. M. Parker, Margaret Buchanan, Thomas Smiley, H. E. Dow, W. R. Sandy, Alfred Williams, A. J. Quigg, and H. E. Blackmar; and to Professors F. E. Bolton, C. E. Seashore, and C. H. Judd.

grade system. Examinations were given to eighth-grade pupils in arithmetic, geography, grammar, history, and spelling. The same questions were submitted, at the same time, with the same instructions, to pupils of the same age, who had studied the same textbooks. These pupils came from the same class of people, and had teachers of about equal preparation.

In selecting the questions for the tests in each subject the following principles were observed. The questions were to cover all of the subject-matter expected below high school. No catch questions should be admitted. The questions should emphasize both the mechanical and reasoning elements and should be so classified. No questions should be selected that would emphasize one method of instruction more than another. Previous eighth-grade examination lists in both city and county examinations, questions mentioned in textbooks, and the studies of Drs. Stone and Cornman were used. The arithmetic questions were selected directly from the set prepared by Dr. Stone, "Some Arithmetical Abilities of 6A Children." The questions in spelling were adopted from Dr. Cornman's study, "Spelling in the Elementary Schools, an Experimental and Statistical Investigation." Questions in other subjects were prepared as follows. After about forty questions had been selected they were submitted to the pupils of the eighth grade of the Iowa City schools and to the pupils of the rural-school District No. 1, West Lucas Township, Johnson County, Iowa. The answer papers were all gone over carefully and the value of the answers was estimated. If the answer was perfect, it was marked 1. An answer that was entirely wrong was marked 0, and those that were considered partly right were given a fractional grade. The results were all tabulated and each question ranked in the order of the number of times that it had been answered correctly.[2] The best twenty questions were then adopted for the tests.

METHOD OF GATHERING DATA

Ten county superintendents and fourteen town superintendents signified their willingness to co-operate with us. To these

[2] Thorndike, *Educational Psychology*, 169.

we sent the lists of questions accompanied by the following directions:

It seems that the best way to choose the schools is for you to pick out enough schools so that the tests can be given to from 20 to 30 eighth-grade pupils in your county. Your acquaintance with your schools will enable you to choose those in average communities, with teachers of average ability. The schools near towns, from which the brightest pupils go to the town schools before the age of fifteen, should not be chosen. We are sending all the questions to you in the hope that you will send them to teachers who will take an interest in the work, and who will be honest in living up to the "directions." If you send them out next week the tests could be given beginning Monday, February 14, 1910.

The only directions sent to the town superintendents were that they require the teachers to give the tests, and that they live up to all directions.

The following directions were sent to each teacher:

Have all the pupils in the eighth grade take the tests. By eighth grade we mean those who will finish the common school branches this year and be ready for the high school next year.

Do not give any explanations, suggestions, corrections, intimations, or any other help to any pupils, and do not have them make any preparations for the tests. (This is important. To make the work of any scientific value you must consider yourself responsible for the fairness of the examinations. Be on your guard against cheating in any form by the pupils.) The object of the examination is to compare school systems, not to test individual schools, therefore the conditions should be the same.

If possible give the tests in the forenoon immediately after the school has been called together. A good order might be to give arithmetic Monday, history Tuesday, geography Wednesday, grammar Thursday, and spelling Friday. Dictate the directions to the pupils for spelling.

Record on each paper the time required for the completion of the examination. Tell the pupils that you are going to do this before the tests begin. Please see to it that the questions to be answered by the pupil are answered correctly. Do not allow them to ask questions about anything.

QUESTIONNAIRE TO THE TEACHER

How many classes have you daily? .....
How many pupils under your charge? .....
How many grades? .....
What textbooks do you use in each subject? .....
About what is the daily attendance? .....
How long have you held your present position? .....

The following questionnaire and directions were given to each pupil:

Give the year,..... month,..... and day..... of your birth. Boy or girl.....? Name or number of your school..... Twp.....? Co.....? Date.....?

What work have you done in this subject, giving books studied, and time spent upon it? .....

Do not copy the questions. Write on both sides of the paper. Do not ask any questions. Do not waste time, because you should finish these tests as soon as possible without hurrying. Your teacher records the time required.

METHOD OF HANDLING DATA

Reports were received from 213 town children and 176 country children. The papers in each subject were arranged and numbered. The towns and counties were each given a Roman numeral, and the country schools a letter, and the pupils were assigned Arabic numerals. (Thus in referring to No. 9, New Albany Twp., Story Co., as an illustration, we call the county, XIV; school, *a;* pupil, No. 3, 2, 1.) This method of numbering the papers enables one to go to any paper at any time and verify the results in the tables. It also makes it possible to withhold the name of the school from the public, and at the same time give out the results.

In marking the papers all answers were marked 0, when wrong or only partially correct; and 1, when correct. All papers in one subject were marked before another subject was begun. If the papers from the rural schools were marked first in arithmetic, the papers from the graded schools were marked first in the next subject. This was done to shift the effect of any unconscious change in the method of marking. In all cases where there was doubt as to what the ruling should be in any situation, a written memorandum was kept of the ruling, as a guide for similar cases. All of the papers except a few in spelling were marked by the writer; during the marking of these spelling papers he was present to supervise.

ARITHMETIC

Dr. Stone's lists which were prepared for 6A children contained twelve questions each. Since we were to deal only with eighth-grade pupils we felt that it was not necessary to use so many and therefore selected the more difficult questions as better for our purpose. Only the last seven problems in "fundamentals" and the last eight in "reasoning" were used. Dr. Stone listed in his group of "fundamentals" the questions that were designed to test the operations in addition, multiplication, division, and subtraction.

The questions submitted in the fundamentals follow:

1. Add 4695, 872, 6786, 567, 858, 9447, 7499.
2. Multiply 976 by 87.
3. Divide 278254 by 678.
4. Multiply 5489 by 9876.
5. Divide 5099941 by 740.
6. Multiply 876 by 749.
7. Divide 62693256 by 859.

Papers were received from 60 "single teacher" and 14 graded schools. The results are tabulated in Tables 1, 2, 3, and 4. In calculating the results in the "fundamental" operations each problem was divided into a number of parts. The following method of division was used. Question 1=4*a*; 2=3*a*, 2*m*; 3=4*m*, 4*d*, 2*s*; 4=6*a*, 4*m*; 5=4*m*, 4*d*, 4*s*; 6=4*a*, 3*m*; 7=5*m*, 5*d*, 4*s*. In this table *a* means addition; *m*, multiplication; *d*, division; and *s*, subtraction; the numbers before the sign of equality designate the number of the problem. This table was developed as a fairer means of interpreting the results than the use of answers.[3] Dr. Stone[4] says that there was little difference in the mistakes made when adding a short or a long column of figures. This being true it seems fair to arrange the problems on the above basis. Another method was considered but rejected because of its greater length. In it each separate opera-

[3] Curtis, *Elementary School Teacher*, October, 1910.

[4] Stone, "Some Arithmetical Abilities of 6A Children."

tion constitutes a problem. The seventh problem is used to illustrate the method used.

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859) 62693256 (72984
     6013
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      2563
      1718
      ----
       8452
       7731
       ----
        7215
        6872
        ----
         3436
         3436
         ----
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In the first place there are five divisions. If there were two mistakes in the quotient, 2 was subtracted from the number 5, leaving 3 the mark for division. In solving this problem the divisor was multiplied by each number in the quotient, making five separate operations. Each operation was considered an operation in multiplication, and if no mistakes were made the answer was given the mark 5*m*. There were only four operations of subtraction if no mistakes were made, because there should be no remainder. If there was no mistake in the solution of the seventh problem, the mark would be 5*m*, 5*d*, 4*s*. The results of all of the operations are arranged in the tables and the comparisons made from the tables. The Roman numerals in the horizontal column at the top of the tables indicate the school if it is graded, and the county if it is of the "one teacher" rural system. There are in this column fourteen graded schools and eight counties. The fundamental operations are arranged in order. The vertical column at the left of the page indicates the problem in which the operation is found. The same problem may occur under three different heads, multiplication, division, and substraction. The horizontal columns contain the results for each school in each operation. The vertical column marked T contains the totals for the horizontal columns. The column marked P indicates what the total should be if there were no

TABLE I. ARITHMETIC

Boys, Graded Schools, Fundamentals

Grades and Number of Pupils															P	Percentage
I 7	II 16	III 10	IV 5	V 0	VI 11	VII 6	VIII 7	IX 5	X 7	XI 10	XII 8	XIII 14	XIV 8	T 114		
ADDITION																
28	57	40	20	39	22	28	20	28	40	28	51	29	..	430	456	
21	49	29	15	33	18	21	15	20	30	24	42	24	..	341	342	
42	91	58	30	66	34	42	30	42	60	44	83	48	..	670	684	
28	64	40	19	44	23	28	20	27	40	32	54	31	..	450	456	
														1,891	1,938	98
MULTIPLICATION																
13	22	30	9	15	10	14	10	14	20	15	28	15	..	221	226	
28	64	34	20	38	24	27	20	27	39	30	56	32	..	439	456	
28	55	28	12	43	18	17	16	27	40	31	55	29	..	399	456	
26	63	46	20	38	22	24	18	28	40	32	56	25	..	438	456	
20	46	29	13	31	17	20	15	21	27	37	42	22	..	340	342	
32	68	48	25	48	24	32	25	35	47	53	70	39	..	546	570	
														2,383	2,506	95
DIVISION																
27	63	36	20	33	24	26	20	27	39	27	55	30	..	427	456	
27	57	32	19	31	22	24	17	24	32	32	52	24	..	393	456	
32	60	40	23	45	23	32	24	33	49	39	68	30	..	498	570	
														1,318	1,482	89
SUBTRACTION																
13	32	20	10	19	12	12	10	14	18	14	28	16	..	218	228	
28	63	39	19	38	23	27	20	27	28	32	52	28	..	425	456	
26	59	38	20	37	19	26	19	28	40	32	55	30	..	432	456	
														1,075	1,140	94

TABLE II. ARITHMETIC

GIRLS, GRADED SCHOOLS, FUNDAMENTALS

GRADES AND NUMBER OF PUPILS														P	PERCENTAGE
I 7	II 5	III 15	IV 6	V 8	VI 6	VII 2	VIII 5	IX 0	X 7	XI 7	XII 14	XIII 12	XIV 3	T 97		
ADDITION																
26	20	48	22	32	23	4	24	..	28	27	56	45	11	366	378	
21	15	44	18	23	18	6	15	..	20	20	42	36	9	287	291	
41	29	81	36	47	36	12	30	..	41	42	84	72	18	569	582	
27	20	55	24	31	24	8	20	..	27	28	56	48	12	368	378	
														1,590	1,629	95
MULTIPLICATION																
13	10	26	12	13	12	4	9	..	14	14	28	24	6	185	189	
26	20	52	24	32	24	8	20	..	28	27	56	47	11	375	378	
27	20	41	18	23	21	6	15	..	27	27	54	48	9	336	378	
28	20	50	24	32	24	8	20	..	28	28	55	48	12	377	378	
21	15	40	18	24	17	6	14	..	21	21	28	35	8	268	291	
34	25	69	30	38	25	10	24	..	35	33	55	55	15	448	485	
														1,989	2,099	94
DIVISION																
21	20	49	24	32	24	8	20	..	28	24	56	47	10	363	378	
26	18	50	24	32	24	8	20	..	28	25	56	46	12	369	378	
28	25	60	30	35	25	10	20	..	33	28	63	51	14	422	485	
														1,154	1,241	91
SUBTRACTION																
14	10	25	12	16	12	4	10	..	14	14	28	24	6	189	189	
27	19	53	24	32	24	8	20	..	28	18	55	47	12	367	378	
26	20	51	24	32	20	8	20	..	28	28	54	42	12	365	378	
														921	945	95

TABLE III. ARITHMETIC

Boys, "One Teacher" Schools, Fundamentals

Grades and Number of Pupils									P	Percentage
I 12	II 5	III 9	IV 2	V 6	VI 10	VII 9	VIII 4	T 57		
ADDITION										
46	20	35	8	24	36	35	16	220	228	
36	15	27	6	18	30	27	12	171	171	
71	30	54	12	36	60	53	24	340	342	
48	20	36	8	24	40	35	16	227	228	
								958	969	99
MULTIPLICATION										
21	10	18	4	13	48	16	8	138	114	
48	20	36	8	24	33	36	16	221	228	
42	19	36	8	24	36	34	16	215	228	
44	20	34	8	24	33	32	16	151	228	
34	15	25	6	18	26	26	12	162	171	
59	25	42	10	29	48	45	15	273	285	
								1,160	1,254	93
DIVISION										
48	20	36	8	24	39	36	16	227	228	
44	20	31	8	26	24	29	16	198	228	
51	13	42	9	29	43	50	20	257	285	
								682	741	92
SUBTRACTION										
23	15	18	4	12	20	18	8	118	114	
47	20	39	8	24	34	36	16	224	228	
47	19	35	8	24	39	35	16	223	228	
								565	570	99

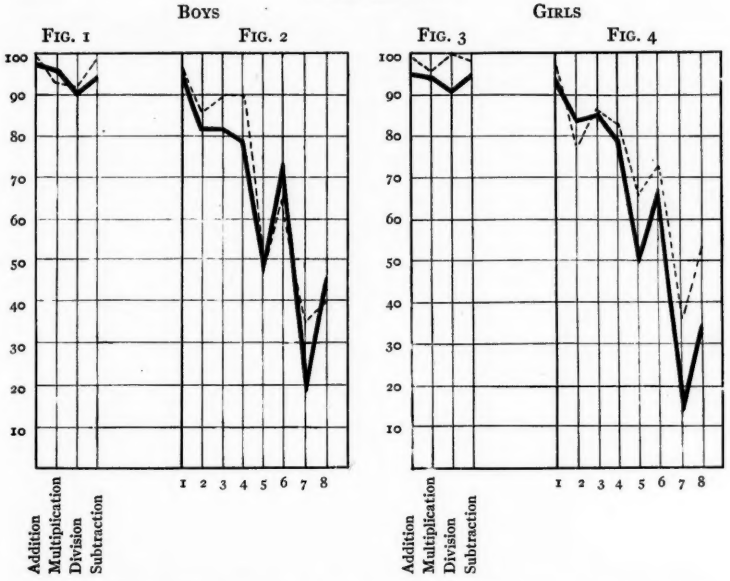
TABLE IV. ARITHMETIC

Girls, "One Teacher" Schools, Fundamentals

Grades and Number of Pupils									P	Percentage
I 13	II 15	III 20	IV 11	V 15	VI 5	VII 18	VIII 14	T 111		
ADDITION										
50	59	76	44	60	20	68	52	431	444	
39	45	60	33	45	15	54	42	333	333	
78	90	118	66	90	30	103	84	659	666	
52	59	80	43	60	20	72	56	442	444	
								1,865	1,887	98
MULTIPLICATION										
25	30	40	20	29	10	35	28	217	222	
51	60	79	41	59	18	71	56	435	444	
48	59	78	44	60	15	69	55	426	444	
51	60	80	40	56	19	63	54	423	444	
39	45	60	31	45	15	54	40	329	333	
65	74	99	51	69	23	76	70	527	555	
								2,357	2,442	97
DIVISION										
48	60	78	41	60	18	69	56	430	444	
41	60	78	41	50	13	60	49	492	444	
56	75	98	49	67	23	75	70	513	555	
								1,435	1,443	99
SUBTRACTION										
26	30	40	22	30	10	36	28	222	222	
52	60	75	44	60	20	65	55	431	444	
51	60	79	44	60	20	60	56	430	444	
								1,083	1,110	98

mistakes. And the column marked Percentage indicates the percentage which is the result obtained by dividing the quantity in Column T, by the quantity in Column P. There are two tables for each subject, one containing the results from the boys' papers, and the other from the girls' papers.

ARITHMETIC



In the curves based upon these tables the broken lines indicate the results from the "one teacher" and the full lines the results from the graded schools. Figures 1 and 2 are comparisons of the boys for fundamentals and reasoning respectively. Figures 3 and 4 show results for the girls.

REASONING PROBLEMS

1. The uniforms for a baseball nine cost $2.50 each. The shoes cost $2.00 a pair. What was the total cost of the uniforms and shoes for the nine?

2. In the schools of a certain city there are 2,200 pupils; one-half are in the primary grade, one-eighth in the high school, and the rest in the night school. How many pupils are there in the night school?

3. If 3½ tons of coal cost $21.00, what will 5½ tons cost?

4. A news dealer bought some magazines for $1.00. He sold them for $1.20, gaining 5 cents on each magazine. How many magazines were there?

5. A girl spent one-eighth of her money for carfare, and three times as much for clothes. Half of what she had left was 80 cents. How much money did she have at first?

6. Two girls received $2.10 for making button-holes. One made 42, the other 28. How should they divide the money?

7. Mr. Brown paid one-third of the cost of a building; Mr. Johnson paid one-half the cost. Mr. Johnson received $500.00 more annual rent than Mr. Brown. How much did he receive?

8. A freight train left Albany for New York at 6 o'clock. An express left on the same track at 8 o'clock. It went at the rate of 40 miles an hour. At what time of the day would it overtake the freight train if the freight train stopped after it had gone 56 miles?

REASONING

In the reasoning problems the numbers in the vertical column at the left are the numbers of the problems. The horizontal

TABLE V. ARITHMETIC

BOYS, GRADED SCHOOLS, REASONING PROBLEMS

	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	T	P	Percentage
1	6	16	10	5	...	9	6	7	5	7	10	8	12	7	108	114	95
2	6	15	9	4	...	8	6	6	5	4	8	8	10	5	94	114	82
3	5	15	7	5	...	9	4	6	5	6	8	8	14	6	98	114	82
4	3	12	10	5	...	6	5	7	5	7	7	8	12	5	102	114	79
5	3	9	4	4	...	5	1	5	5	6	2	4	6	1	55	114	46
6	6	13	7	4	...	7	5	7	4	6	3	7	10	4	83	114	73
7	0	3	0	1	...	3	1	3	4	1	1	3	1	0	21	114	18
8	4	3	3	4	...	7	2	3	4	7	3	1	7	3	51	114	45
Number of pupils	7	16	10	5	0	11	6	7	5	7	10	8	14	8	114		

"ONE TEACHER" SCHOOLS, REASONING PROBLEMS

1	12	5	9	2	5	10	8	4	...	...	...	...	...	...	55	57	97
2	11	5	8	2	6	8	5	4	...	...	...	...	...	...	49	57	86
3	9	5	8	2	6	9	8	4	...	...	...	...	...	...	51	57	90
4	11	5	8	2	5	10	7	3	...	...	...	...	...	...	51	57	90
5	8	3	5	1	4	5	4	3	...	...	...	...	...	...	33	57	50
6	6	6	7	2	5	5	6	3	...	...	...	...	...	...	37	57	65
7	2	5	5	2	0	2	4	0	...	...	...	...	...	...	20	57	35
8	4	5	3	1	4	2	2	2	...	...	...	...	...	...	23	67	40
Number of pupils	12	5	9	2	6	10	9	4	...	...	...	...	...	...	57	57	

TABLE VI. ARITHMETIC

GIRLS, GRADED SCHOOLS, REASONING PROBLEMS

	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	T	P	Percentage
1.....	7	4	15	6	7	6	2	5	...	7	6	14	10	3	92	97	95
2.....	6	5	13	5	4	4	2	5	...	6	7	11	10	3	81	97	83
3.....	5	5	10	6	8	6	2	4	...	7	5	13	10	3	86	97	76
4.....	4	4	13	6	6	3	2	5	...	6	5	13	8	2	77	97	88
5.....	1	5	2	5	3	1	2	3	...	4	2	12	5	2	47	97	48
6.....	3	5	7	5	4	3	1	4	...	4	5	13	8	3	62	97	67
7.....	1	0	0	0	1	0	1	1	...	0	0	6	1	2	13	97	13
8.....	1	4	2		4	1	1	0	...	3	2	5	5	2	33	97	34
Number of pupils	7	5	15	6	7	6	2	5	0	7	7	14	12	3	97	97	

"ONE TEACHER" SCHOOLS, REASONING PROBLEMS

1.....	12	15	19	11	15	5	18	14	...	...	...	...	...	...	109	III	99
2.....	12	10	13	10	13	2	14	11	...	...	...	...	...	...	85	III	77
3.....	11	15	20	7	14	5	11	13	...	...	...	...	...	...	6	III	86
4.....	8	14	18	9	13	3	14	14	...	...	...	...	...	...	93	III	84
5.....	6	13	16	8	11	1	5	13	...	...	...	...	...	...	73	III	65
6.....	6	12	19	9	14	2	11	13	...	...	...	...	...	...	86	III	72
7.....	3	11	5	4	7	0	6	4	...	...	...	...	...	...	40	III	36
8.....	4	14	9	8	6	1	5	12	...	...	...	...	...	...	59	III	53
Number of pupils	13	15	20	11	15	5	18	14	...	...	...	...	...	...		III	

columns contain the number of correct answers for each school or county. The vertical columns marked T, Percentage, and P contain the sum of correct answers, the percentage of correct answers, and the sum of the answers had there been no errors. The percentage is obtained by dividing the sum of the correct answers by the sum of the answers if no mistakes were made.

GEOGRAPHY QUESTIONS

1. Name and locate five important cities in Iowa.
2. In what state is each of the following cities: St. Louis, New Orleans, Cleveland, Davenport, Omaha, Minneapolis, Pittsburgh, Boston, Seattle, San Francisco?
3. What parts of the earth have four seasons?
4. Locate the Isthmus of Panama.
5. Name and locate three mountain ranges in the United States.
6. What is the climate of Porto Rico?
7. Into what zones is the earth's surface divided?
8. What are five important minerals of the United States?

9. Name three commercial advantages of Chicago, and explain how they have affected the growth of that city.

10. The Mississippi River forms the eastern boundary of what states?

11. Locate Oxford, Berlin, Rome, St. Petersburg, Copenhagen, the Hague, Geneva, Venice, Athens, Manila.

12. How did the United States gain possession of the Philippines?

13. Name five important pork-packing cities.

14. Name three reasons why the eastern part of our country is so thickly settled.

15. In what states and territories are the gold mines of the United States?

16. What country of South America is likely to become an important rival of the United States in cattle and wheat raising? Why?

17. To what country do we export most of our cattle products? Why?

18. In what three parts of Europe are the principal mountain ranges?

19. How do you account for the difference in climate between Oregon and New England?

20. What are the three things that mainly affect climate?

21. What are the three movements of the waters of the ocean?

22. Name the capitals of England, France, Brazil, Japan, Chili.

GEOGRAPHY

According to our general plan we have divided these questions into two groups, "mechanical" and "reasoning." Questions 1, 2, 3, 4, 5, 7, 8, 10, 11, 12, 15, 18, 20, 21, and 22 are called "mechanical," and 6, 9, 13, 14, 16, 17, and 19 are called "reasoning" questions. This classification is of course only a rough attempt at analyzing the mental processes used in answering the questions, but in general seems justifiable. Under "mechanical" are classed those questions that seem to require little more than mere memory. There are however under this classification questions that range from mere visual imagery to problems of reasoning. Question 10 is an example of the first, and Question 11 of the second sort. In either case the process used in answering the question may be only memory, but again it may be that the child recalls the location of the place by means of his power to reason.

In marking the papers no more definite location was required than the assignment of cities to their proper country. In this subject the same method of tabulation was used as has been

previously described as being used in arithmetic, but to save space only the percentage results are here presented.

TABLE VII. GEOGRAPHY

PERCENTAGES

"ONE TEACHER" SCHOOLS		GRADED SCHOOLS	
57 Boys	115 Girls	106 Boys	97 Girls
89	81	85	82
91	92	95	77
51	48	50	49
99	46	88	84
76	71	69	73
91	88	76	66
92	86	73	78
100	97	99	89
51	59	51	41
43	48	35	31
76	71	62	69
92	89	86	70
77	65	64	43
51	51	39	43
48	49	32	29
65	53	53	53
36	35	49	59
61	69	64	63
13	28	21	12
8	16	10	5
11	40	15	11
50	45	21	30

RESULTS

In comparing the curves representing the boys in Fig. 5, it is observed that the full line goes above the broken line five times—on Questions 2, 17, 18, 19, and 20. In Fig. 6, in which the girls are compared, the full line is above on Questions 3, 4, and 17. In the "one teacher" schools the "range" is 80 per cent from 18–98 per cent, and for the graded schools it is 89 per cent from 6–96 per cent. The two curves have the same general tendency, at no time running counter to one another, indicating that the questions were satisfactory. If they had not run so nearly in the same direction it would have been thought that for one system the questions were not as fair as for the other, that the results depended on method of instruction rather than subject-matter. The curves are higher when the questions bore upon

subjects connected with our own state and country, than when they bore upon other states and foreign countries.

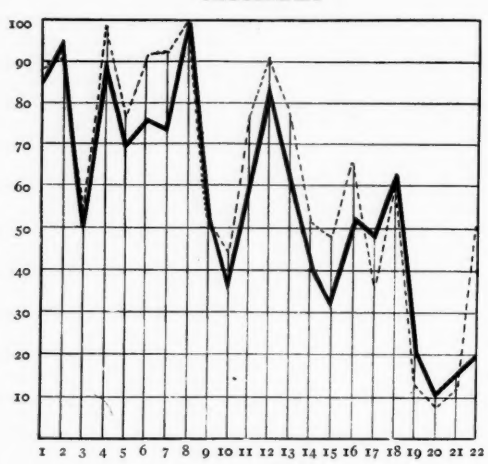


FIG. 5.—BOYS

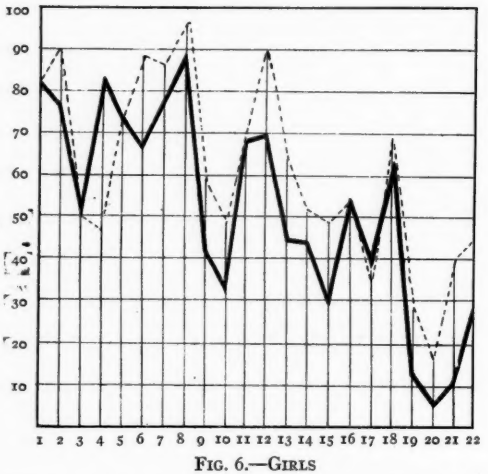


FIG. 6.—GIRLS

In comparing the results in the different groups, the average percentages were arranged in a table according to the group in which it was classified.

REASONING GROUP

Q	Percentages		
	G	O. T.	D
6	71	89	18
9	45	62	17
13	51	68	17
14	43	52	9
16	53	59	6
17	42	35	−7
COMMERCIAL			
8	97	98	1
9	45	62	17
13	51	68	17
14	43	53	9
15	31	58	27
16	53	59	6
17	42	35	−7
LOCATION			
1	80	84	1
2	76	76	0
4	90	97	7
5	72	72	0
10	33	47	14
11	24	31	7
18	64	71	7
22	12	40	28
PHYSICAL			
3	48	42	−6
5	12	12	0
6	71	89	18
7	78	88	10
15	31	58	27
16	31	58	27
19	53	59	6
20	6	18	12
21	12	40	28
VISUAL IMAGE			
1	85	85	0
4	90	97	7
5	72	72	0
10	33	47	14
18	64	71	7

In the above table, Q, O.T., G, and D, equal, respectively, the number of the question, "one teacher," graded, and difference. When the graded surpasses the "one teacher" system the difference is a negative quantity.

AGRICULTURAL EDUCATION: AGRICULTURAL SOCIETIES

BENJAMIN MARSHALL DAVIS
Miami University

The development of agricultural societies may be divided into four periods: (1) from 1785 to 1850—the period of beginnings; (2) from 1850 to 1870—the period of agricultural fairs; (3) from 1870 to 1892—the period of great organizations; (4) from 1892 to the present—the period of adjustment (102, p. 291).[1]

FIRST PERIOD

The first period in its relation to agricultural education is an important one, particularly in its historical significance. The influence of these early societies on agricultural education is perhaps greater than that of any other single factor contributing to its development. The idea of such an education is regarded by some as originating in these societies. That it was much exploited by them is certainly true. The idea persisted and grew, and may be followed from this early period to the establishment of land-grant colleges. The idea persists today, but modified to include elementary and secondary education.

In 1785 the Philadelphia Society for the Promotion of Agriculture was organized, and later in the same year a similar society was formed at Charleston, S.C. Within that decade a number of other societies were organized. Among the members of these societies were many prominent men such as George Washington, Benjamin Franklin, and Timothy Pickering. These men were also interested in education. It is not strange that the two interests should be combined in their minds into the idea of agricultural education.

Benjamin Franklin had given expression to this idea many years before the founding of the first agricultural society. Referring to the education of the youth of Pennsylvania he says:

[1] The references are to the bibliography at the end of this article or to bibliographies in other articles of this series.

> While they are reading natural history might not a little gardening, planting, grafting, inoculating be taught and practiced, and now and then excursions made to the neighboring plantations of the best farms, their methods observed and reasoned upon for the information of youth, the improvement of agriculture being useful to all and skill in it no disparagement to any? (102, p. 361.)

This idea was first put into actual practice in 1792 when agriculture became a subject of instruction in Columbia College. This was brought about chiefly through the agitation of the New York, and other agricultural societies.[2] Another example of the attitude of these early societies toward agricultural education is found in the action of the Philadelphia Society in 1794. The society appointed a committee to outline a plan for establishing a "State Society for the Promotion of Agriculture, connecting with it the Education of Youth in the knowledge of that most important Art while they are acquiring other useful knowledge suitable for the agricultural citizens of the State." The plan which was drawn up and presented to the society includes some very definite references to agricultural education. Agricultural information was to be disseminated in whatever manner the legislature should think best, "whether by endowing professorships to be annexed to the University of Pennsylvania and the College of Carlisle, and other seminaries of learning, or for the purpose of teaching the chemical philosophy and elementary parts of the theory of agriculture." County societies were to be created with "county schoolmasters" as secretaries; and the schoolhouses the places of meeting and the repositories of their transactions, models, etc. "The legislature may enjoin on these schoolmasters the combination of the subject of agriculture with other parts of education. This may easily be effected by introducing, as school books, those on this subject, and thereby making it familiar to their pupils" (102, p. 363). The fact that the plan of the committee was rejected does not alter its significance in its bearing upon subsequent developments in agricultural education. It is especially noteworthy that the plan proposed is in harmony with some present-day practices: the rural school as a community center, correlation of agriculture with other school subjects, and agricultural textbooks.

[2] This *Journal*, X, No. 4 (November, 1909), 101.

During this entire period the subject of agricultural education was much discussed. Various plans were proposed for its development. Some provided that the societies themselves should organize stock companies to establish schools for instruction in agricultural subjects. Several such schools were started, but owing to difficulties (chiefly financial) they were not successful. These attempts were an important stage in the evolution of the agricultural college.

Stock-company plans were succeeded by others involving state or federal support. The agricultural societies representing associated effort were finally able to secure the attention of legislative bodies. In New York State, for example, the New York State Agricultural Society began a campaign for a school of agriculture soon after the date of its organization (1832), and continued it until 1853 when the legislature granted a charter for such an institution. The founding of the Agricultural College of Cornell University was no doubt due in a large measure to the activity of the New York State Agricultural Society, and of other agricultural societies of the state.

The Michigan State Agricultural Society which was formed in 1849 immediately set to work to secure a state agricultural college. Its efforts at once secured the attention of the legislature. The matter was brought up at each session of the legislature until, in 1855, a bill authorizing the establishment of the State Agricultural College of Michigan became a law.

The activities of the agricultural societies of New York and Michigan in promoting agricultural education is typical of what was accomplished by similar societies in Pennsylvania, Connecticut, and other states during this period.

SECOND PERIOD

In 1858 there were over 900 agricultural and horticultural societies listed at the Patent Office, and in 1868 the Department of Agriculture listed 1,350. All but about 100 of these were organized after 1849 (102, p. 292).

The chief interest of most of these societies was in holding fairs. In many ways these fairs were of considerable educational value, especially in diffusing new ideas, in furnishing an opportunity for social intercourse, and in introducing better farm

practice and new types of farm products. Often addresses by prominent speakers were provided as special educational features.

On the whole this period was marked by a great development of organized effort, including associations of many kinds, and ranging from national organizations to mere local farmers' clubs.

THIRD PERIOD

This period is characterized by large associations, national in scope. It represents a stage in development when agricultural people began to recognize the importance of "getting together," and of using co-operative means for securing better business and educational opportunities and more favorable legislation. This was undertaken through large formal organizations, through co-operative concerns which were intended to do away with the "middleman," through activity in politics, and through education, directly by means of colleges and other schools, and by means of discussions and publications. Several large organizations constituted the machinery of this movement, the most important of which were the Grange and the Farmers' Alliance.

The Grange was founded in 1867, and became a national society in 1873. It is a very complete organization with the lodge as a unit, subordinate to the County Grange which is subordinate to the State Grange, this in turn being subordinate to the National Grange. The purposes are fraternal, social, educational, political, and financial. Educational work is a feature of each meeting, a certain part of the program being devoted to this subject. Sometimes the educational work of the lodges of a whole state is planned definitely by one of the state officers, the state grand lecturer. The meetings of the lodge are often held in schoolhouses, thus making the school property a community center for adults as well as children. The interest of the Grange in the school does not stop with the use of the schoolhouse as a meeting place, but it lends its support to all measures intended for the betterment of rural education, and particularly to those involving a greater use of country-life subjects. The Grange was for a time a very powerful society, but by 1880 its power as a national organization was lost. It declined rapidly both in membership and influence until ten years later when it began to revive again.

The Farmers' Alliance was somewhat similar to the Grange in plan and purpose. Its activity however was chiefly directed toward securing better legislation favorable to rural interests, mainly financial. Soon after the formation of the Populist party little was left of the Farmers' Alliance as an organization.

FOURTH PERIOD

With more than a century of experience agricultural societies are now being readjusted to secure for all interests of agriculture and rural life advantages that may be secured only through organized effort. They may be classified into three groups: national, state, and local. A large number of each group is devoted to some special agricultural interest, such as bee-keeping, apple production, sheep-breeding, and the like, almost every conceivable phase of agriculture being represented by an organization.

Of the national societies the Grange is perhaps the most important. Since 1890 it has emphasized social and educational features, and has recovered from the decline of the previous decade. Its interest and influence in educational matters are greater than ever before.

There are now over seven hundred state agricultural societies most of which are devoted to special interests. In some states the state society has no connection with local societies, but in others the state organization is made up of representatives from local societies.

The latter plan is well illustrated by the Michigan State Association of Farmers' Clubs. In 1908 the state association included one hundred and twenty clubs from thirty-two counties. In 1908 these clubs had a membership of over seven thousand. The association holds an annual meeting in which a majority of the associated clubs are represented. The program consists of reports of various clubs, several addresses on subjects of general interest to farmers, and reports of committees.

A good example of the work of a local club is shown by the following synopsis of its annual report to the association:

The club is eleven years old, with a membership of 71, and average attendance of 50. Annual dues are ten cents per member; the club holds twelve meetings a year, all-day meetings from October to April. Men's meetings in February, May; temperance meetings in February, March;

young people's meetings in April; ladies' meeting in May; club fair in October; picnic in August. The club publishes a paper called the *Rural Grit* (114, p. 15).

The addresses at the annual meetings are on topics of general interest to farmers, often on agricultural education. The most important committee is the one on resolutions. Some recommendations directed toward legislation are usually found in its reports.

The published proceedings of the various agricultural societies contain important contributions to the literature of agricultural education. The importance lies not so much in the new points of view or new ideas presented as in the fact that these articles indicate the attitude of the most progressive farmers on this question. The *Report of the Proceedings of the New Jersey Horticultural Society* for 1910 contains a discussion of "What Shall We Teach the Farmer's Child?" (115). A scheme is proposed for dividing the school year into more equal periods between farm practice and school work. The difficulty of applying such a plan is found in the present long high-school year and short vacation period, and in the absence of instruction in agricultural subjects. The author may have had in mind some shop work, as is being introduced in Cincinnati, and in other places.

The idea is suggestive of possibilities that might be developed in rural schools to advantage, provided the long vacation period were spent in applying the scientific principles of agriculture to farm practice. The boys of the Baltimore County (Md.) Agricultural High School carry on extensive experiments on their home farms during vacation periods. Their work is inspected from time to time by the teacher of agriculture in the high school, the teacher being employed to give his time during the entire year to school matters. This plan has been in operation only one year, but the results have been very satisfactory. Such an arrangement would do away with some of the objections to the present system of education raised by the above paper, that the

high schools are simply feeding the boys and girls to universities and general colleges, but unfitting them for the practical duties of life. . . . . One great

trouble with farming today is the fact that for half a century or more country teachers have worn the label and wire of an education arranged for a town school. The material benefits of education, such as they are in a public way, and the public spirit of it, have been town bred and built. One great reason why farming of late years has become more hopeful and prosperous is because we are at last developing a definite form and spirit of farm education.

There are so many societies publishing proceedings that no further reference will be made except to refer to the fact that the discussions appearing in these proceedings on instruction in agriculture in the public schools usually favor such instruction, but not always. Occasionally views are expressed against it. In the *Proceedings of the Iowa Horticultural Society* for 1909 we find an example of the latter (116). The writer reviews the conditions of the Iowa rural schools. His own county has 208 rural schools. He regards the introduction of agricultural instruction in these schools as impossible, even if desirable. He would improve the teaching of these schools by placing more emphasis on the "three R's." He says, "the most persistent and able advocates of agriculture in the public schools are teachers and professors in our state and other colleges." This is not an isolated example of the conservative attitude of the farmer toward education. Similar views are held in every farming community in the country. The little one-room school is regarded as necessary for any scheme of rural education. If the scheme does not fit into the existing system it is unworthy. Much of the opposition to consolidation is no doubt due to the reluctance of abandoning the single-room school, and to the inability to see how a readjustment of school affairs can be brought about.

The sentence just quoted referring to "teachers and professors" advocating agricultural instruction shows a little of the resentment that has grown up lately in several parts of the country toward the activity of those interested in the promotion of agricultural education in the elementary and secondary schools. A prominent agricultural journal has recently cast some reflection on the motives of some of the men now engaged in agricultural extension among public schools, intimating that

the matter is being agitated for the benefit of agricultural colleges. The editor finds some sympathy among his readers, as evidenced by a protest from one subscriber against so much space being given to school matters, and so little being given to the discussion of sheep-killing dogs!

Particular mention should be made of the work of the Massachusetts Horticultural Society in its relation to the school-garden movement (117). Soon after Henry L. Clapp introduced school gardening into the George Putnam School of Boston, the Massachusetts Horticultural Society began to encourage the establishment of school gardens in other places in New England by offering prizes for the best gardens entering competition, and by giving prominence to the subject in its published proceedings. Since 1893, one feature of its annual meeting is the session devoted to hearing reports on school gardens. The growth of the school-garden movement of the United States owes much to this society.

The following are a few extracts from letters written by officers of some agricultural societies in answer to an inquiry as to what their societies are now doing toward promoting agricultural education. These are typical expressions, and are taken at random from a number of replies:

Our meetings are always public and we invite teachers, students, and the general public to attend the sessions. We have not taken any definite steps toward the teaching of agriculture or horticulture in the schools, although whenever occasion offers, we are glad to say a word favoring the movement (Vermont).

We have held sessions at the State Normal Schools and have had addresses that we thought would be of value to prospective teachers (New Jersey).

We think it is an important subject and hope to see more of at least the rudiments of horticulture taught in the schools soon (Kansas).

We have papers and discussions in nearly every volume we publish regarding horticultural subjects, bearing on their relation to the public schools (Illinois).

We have undertaken recently the task of improving in some measure the grounds surrounding the rural schools of the state. We have realized for years the deplorable conditions in this respect; the lack of adequate playgrounds; the lack of order and even common cleanliness, the utter lack of

any decoration, and other things too numerous to mention. We are feeling our way carefully and so far have but little to report. We have selected seven districts widely separated and for these schools we furnish landscape plans and trees and shrubs to plant the same. We also furnish expert superintendence and inspection. So far the work has been very discouraging on account of the lack of co-operation or even friendly spirit on the part of school officers and teachers. We hope, however, for better things and intend to keep on (Wisconsin).

The brief account just given of agricultural societies is sufficient to indicate at least some of their most important relations to agricultural education, and to impress upon the student of rural education the value of their influence in any movement affecting the country schools. Being composed of representative members of the very communities that are supposed to be benefited by improved rural education, their point of view in educational matters must be considered in any plans to bring about better rural school conditions and their co-operation is needed for attempt to carry out these plans.

BIBLIOGRAPHY

The facts of the text were obtained partly from the contributions of Kenyon L. Butterfield and L. H. Bailey in the *Encyclopedia of American Agriculture,* from private letters from secretaries of various state agricultural societies, and from proceedings of these societies. Only the references made by number in the text are included in the bibliography.

114. Michigan State Association of Farmers' Clubs, *Proceedings of the Seventeenth Annual Session* (1909), p. 56.

Besides a report of the proceedings there is included resolutions regarding state and national affairs, and constitution and by-laws of the Association.

115. "What Shall We Teach the Farm Child?" H. W. COLLINWOOD. *Proceedings of the New Jersey State Horticultural Society,* Thirty-fifth Annual Session (1909), 169–74.

Reviewed in text.

116. "Agriculture in Our Public Schools." WILLIAM LANGHAM. *Proceedings of the Iowa State Horticultural Society,* XLIV (1909), 147–54.

Reviewed in text.

117. "Report of Committee on School Gardens and Children's Herbariums of the Massachusetts Horticultural Society," *Transactions of the Massachusetts Horticultural Society.* 1894–1907.

Beginning with 1894 and continuing to 1907 these reports of the committee on children's school gardens appeared in the transactions of the Society. After 1907 the Society discontinued the special school-garden feature of its meetings and of its transactions.

EDITORIAL NOTES

Dean Russell on Manual Training

In his annual report issued in November, 1910, Dean Russell of Teachers College makes some very significant remarks about manual training. He opens his comments by referring to the generous support given to this department from the beginning of Teachers College. "It must be confessed, however," he goes on to say, "that the results have not been commensurate with the expenditures made on account of the department, nor has it realized the expectations of its founders in educational efficiency." This statement is followed by a discussion of the difficulty of getting properly qualified students to take manual-training courses. Finally, there is a statement of the policy of Teachers College in the following promises: "The term manual training will be gradually abandoned and in its place we shall have industrial arts, household arts, fine arts, elementary science and the like, indicative of subjects to be taught rather than of teaching methods or educational discipline. The final outcome is the establishment of a School of Industrial Arts to supplant the department of manual training."

Particular Trades versus General Training

Such an announcement as this will be welcomed in many quarters. Manual training certainly has not articulated itself with the other work in our schools. The teachers who have turned to the manual arts have in general been inferior in training and lacking in breadth of educational view. The criticism of the department is merited. Is the solution offered the necessary outcome of this criticism? First, let it be noted that no subject should be condemned because it is badly taught. There is no subject in the course of study which does not suffer seriously at the hands of untrained teachers. Second, there must be something of value in the industrial arts else they would not be evolved out of the unsuccess of manual training. This kernel of value in sewing and carpentry cannot be merely the skill in that particular trade. The educational institution which uses

sewing for educational purposes must see beyond the stitches to something of value in the experience of the student. Suppose that some teacher of sewing fails to teach that subject well. Will there be a further breaking up of sewing into the art of making hems and the art of buttonholing? Can the values of handwork be defined in detail only? Is there no broad general result which can be advocated? Dean Russell seems to believe that there is something general for on the next page he advocates turning young artisans into teachers in these industrial arts by giving them "that background of knowledge in drawing, mathematics, science, and language" which will make them leaders of their fellows. "The training of the teachers," he continues, "requires little more than we are now offering [in the night school]: it means the organization of a special curriculum in which the theory of trade teaching and practice in class instruction shall have a place." What will be taken up in the theory of trade training? Will there be some discussion of tests for the selection of proper candidates for this trade or that? Will there be a separate theory for this industry and that? How can there be any generalization of the teacher's art?

General Principles Needed

Frankly, the scheme proposed seems too atomic and fragmentary to hold together. There is something worth saving in the general idea of manual training as a broad inclusive educational conception. The concept needs expansion rather than contraction. One trouble in the past has been that industry and art have been divorced. As a result there has grown up in the minds of students a feeling that useful things and beautiful things do not belong in the same class. If we divide art and the arts any further we shall suffer even more. Why not begin to enlarge the conception of manual training or some other conception which can fill the same function so as to include industrial design as well as fine art? When this is done, why not give the general principles of all industrial design to those who are interested in each of the arts? If there is not some general unifying force which will hold together the various types of industrial training, the training will do nothing to create a broad interest in industry as distinguished from trade.

Manual Training Must Be Related to Other Subjects

The same type of consideration arises with reference to the relation of the industries and the other school subjects. Manual training has thus far been outside the "regular" school work. The reason for this is that no one has taken a broad enough view of its function to work it out in a form that makes it as general as arithmetic or geography. The reason why our public schools continue to teach arithmetic is that in arithmetic all the pupils get a kind of training which will be useful to them whatever they take up later in life. When one finds bad teaching in arithmetic he does not break the subject up into the arithmetic of cooking and the arithmetic of plumbing. He goes about the improvement of teaching. Let us take the same attitude a little longer regarding the industrial course in our schools. The experiment of manual training is still young in American schools. The present writer for one is not ready to agree that there is no place for a general department which shall unite all these different activities under one general body of principles.

C. H. J.

BOOK REVIEWS

A History of Education during the Middle Ages and the Transition to Modern Times. By FRANK PIERREPONT GRAVES. New York: Macmillan, 1910. Pp. xv+327. $1.10.

This is the second in a series of textbooks on the history of education, the first, issued in 1909, dealing with the period before the Middle Ages, and the present volume dealing with the period from the beginning of the Middle Ages to the French Revolution. About one hundred pages are devoted to the Middle Ages and two hundred to the Renaissance and the seventeenth and eighteenth centuries. This is about equal in scope and amount of material to the middle third of Monroe's *Text Book in the History of Education.*

The author's point of view is described at length in the preface and first chapter of the earlier volume. There it is stated that he follows Davidson in regarding education as conscious evolution, and uses the same method of approach as Professor Monroe. It is expected that the student will gain from the study of the text an appreciation of the way in which educational systems arise in response to social needs, become stereotyped as social habits or institutions which limit the individual, and are reformed or brought up to date by protesting movements or individuals.

The social background of each movement is discussed, in some cases particularly well, e.g., in the chapter on humanistic education in Italy. A good statement of the varied influences at work is given in such a concrete way as materially to aid the student in appreciating what the Renaissance was.

The book maintains a fair balance between three factors, namely, general social movements, educational theory, and the actual establishment of schools. There are chapters on monasticism, Charlemagne, Alfred, Muhammedan learning, mysticism and scholasticism, feudalism and chivalry, the friars, universities, developments of cities and city schools, the Renaissance, humanistic education in Italy, humanistic education in the North, influence of Protestantism, Catholic education, beginnings of realistic education, sense realism, and on Puritanism, Pietism, and Rationalism.

The language used is simple and adapted to the understanding of the ordinary student; which one would not expect after reading that the author follows Davidson. The only incomprehensible parts are in the chapter on scholasticism, a topic which philosophical-minded writers on the history of education continue to think essential, and which ordinary students will continue to fail to understand.

The following minor criticisms are offered: (1) The book retains some elements of the encyclopedism which the better texts in history are eliminating. Thus in a 21-page chapter on realism there are only 16 pages devoted to a discussion of Rabelais, Montaigne, Mulcaster, Milton, and Locke. On p. 54 we have the half-dozen leading scholastics given with their dates in the same number of lines. Seven followers of Chrysoloras—Niccoli, Bruni, Guarino, Battista Guarino, Poggio, Filelfo, Vergerio—all are described in two pages (119–20)

which might better have been devoted to Chrysoloras who receives only a half page. (2) Greater care might have been taken to give the student a comprehension of actual school conditions. On p. 98 it is stated that gild schools were generally elementary in character, but not infrequently secondary, and that "while most of the work was in the vernacular, courses in Latin and other higher subjects were also afforded." Such evidence as Leach gives would seem to indicate just the opposite. Moreover, the impression gained (on p. 198) of the active establishment of elementary schools by Protestant German states, is scarcely borne out by Paulsen's account according to whom Latin schools were the primary interest of the educational leaders and German schools either prohibited (as in Saxony) or were makeshifts as in Würtemburg. Nor is the student given any adequate picture of what horrible makeshifts Protestant elementary schools were down to the nineteenth century. (3) In common with other texts which claim to emphasize the social background of education, little account is given of the development of modern science as a factor in modern social and educational reform. Only one page (262) is devoted to sixteenth- and seventeenth-century science and Newton is not mentioned in it. Yet this is followed by four pages on Francis Bacon. Similarly the discussion of Voltaire and French Rationalism is preceded by a 6-page discussion of Locke, while Newton, the chief inspirer of Voltaire and called by the latter "the greatest man in the world," is not mentioned.

These criticisms are not intended to deny the general value of the book which I think is the best text for the limited period covered that we have in English.

S. CHESTER PARKER

BOOKS RECEIVED

AMERICAN BOOK CO., NEW YORK

Stephen of Philadelphia. By JAMES OTIS. Cloth. Illustrated. Pp. 166. $0.35.

Peter of New Amsterdam. By JAMES OTIS. Cloth. Illustrated. Pp. 158. $0.35.

Stories of American Discoverers for Little Americans. By ROSE LUCIA. Cloth. Illustrated. Pp. 176. $0.40.

Dramatic Reader for Grammar Grades. By MARIETTA KNIGHT. Cloth. Illustrated. Pp. 267. $0.50.

Nature Myths of Many Lands. By FLORENCE V. FARMER. Cloth. Illustrated. Pp. 224. $0.45.

Vocational Education. By JOHN M. GILLETTE. Cloth. Pp. 303. $1.00.

The Last of the Mohicans. Adapted by MARGARET N. HAIGHT. Cloth. Illustrated. Pp. 142. $0.35.

Easy French Prose Composition. By H. A. GUERBER. Cloth. Pp. 91. $0.25.

ATKINSON, MENTZER & GROVER, NEW YORK

The Personal Equation. By LAWRENCE MCTURAN. With an Introduction by JAMES L. HUGHES. Cloth. Pp. 248.

The Childhood of Ji-Shib, the Ojibwa. By ALBERT ERNEST JENKS. With Illustrations and Decorations by STACY H. WOOD. Cloth. Pp. 96.

COLONIAL BOOK CO., CHICAGO

Elementary Lessons in English. By GEORGE C. HOWLAND. Cloth. Illustrated. Pp. 207. $0.60.

Advanced Lessons in English. By GEORGE C. HOWLAND. Cloth. Illustrated. Pp. 314. $0.40.

COLUMBIA UNIVERSITY PRESS, NEW YORK

Handwriting. By EDWARD L. THORNDIKE. Paper covers. Pp. 93. $0.30.

Equipment for Teaching Domestic Science. By HELEN KINNE. Paper covers. Illustrated. Pp. 100.

A Syllabus of a Course on Elementary Bookmaking and Bookbinding. By SARAH J. FREEMAN, A.B. Paper covers. Illustrated. Pp. 42. $0.30.

DANA ESTES & CO., BOSTON

Rainy Day Pastimes for Children. By BARONESS VON PALM. Cloth. Illustrated. Pp. 125. $1.00.

DOUBLEDAY, PAGE & CO., NEW YORK

Children's Diet in Home and School. With Classified Recipes and Menus. By LOUISE E. HOGAN. Cloth. Pp. 194.

FORBES & CO., CHICAGO

Confidences: Talks with a Young Girl concerning Herself. By EDITH B. LOWRY, M.D., Cloth. Pp. 94. $0.50.

GINN & CO., BOSTON

Wentworth's Plane Geometry. Revised by GEORGE WENTWORTH and DAVID EUGENE SMITH. Cloth. Pp. 287. $0.80.

Song Reader. By JAMES M. MCLAUGHLIN and W. W. GILCHRIST. Cloth. Pp. 156. $0.45.

The Blodgett Readers by Grades. Books I, II, and III. By FRANCES E. BLODGETT and ANDREW B. BLODGETT. Cloth. Illustrated. Book I, pp. 131, $0.30; Book II, pp. 173, $0.35; Book III, pp. 221, $0.40.

Little Plays for Little People. By MARION I. NOYES and BLANCHE H. RAY. Cloth. Illustrated. Pp. 122. $0.35.

HARPER & BROS., NEW YORK

Travels in History. By MARK TWAIN. Cloth. Illustrated. Pp. 171. $0.50.

HOUGHTON MIFFLIN CO., BOSTON

Ethics for Children. By ELLA LYMAN CABOT. Cloth. Pp. 254. $1.25.

The Basket Woman. By MARY AUSTIN. Cloth. Illustrated. Pp. 222. $0.60.

Captains of Industry. By JAMES PARTON. Cloth. Illustrated. Pp. 114. $0.25.

Little Mr. Thimblefinger Stories. By JOEL CHANDLER HARRIS. Cloth. Illustrated. Pp. 164. $0.40.

B. F. JOHNSON PUBLISHING CO., RICHMOND

School Arithmetic. Elementary Book. By JOHN M. COLAW, FRANK W. DUKE, and JAMES K. POWERS. Cloth. Illustrated. Pp. 256. $0.35.

LITTLE, BROWN & CO., BOSTON

Betty in Canada. By ETTA BLAISDELL MCDONALD and JULIA DALRYMPLE. Cloth. Illustrated. Pp. 111. $0.60.

Boris in Russia. By ETTA BLAISDELL MCDONALD and JULIA DALRYMPLE. Cloth. Illustrated. Pp. 120. $0.60.

Gerda in Sweden. By ETTA BLAISDELL MCDONALD and JULIA DALRYMPLE. Cloth. Illustrated. Pp. 120. $0.60.

Fritz in Germany. By ELLA BLAISDELL MCDONALD and JULIA DALRYMPLE. Cloth. Illustrated. Pp. 120. $0.60.

THE MACMILLAN CO., NEW YORK

The Industrial History of the United States. By KATHARINE COMAN, PH.B. Cloth. Illustrated. Pp. 461. $1.50.

Selections from the Old Testament. Edited with Introduction and Notes by FRED NEWTON SCOTT. Cloth. Pp. 335. $0.25.

The Man without a Country, and Other Stories. By EDWARD EVERETT HALE. Edited by SAMUEL MARION TUCKER, PH.D. Cloth. Pp. 200. $0.25.

An Outline for the Study of American Civil Government. Prepared for the New England History Teachers' Association by its Committee. Cloth. Pp. 187. $0.50.

A First Reader for New American Citizens. By FRANCES SANKSTONE MINTZ. Cloth. Illustrated. Pp. 188. $0.50.

Principles of Secondary Education. By CHARLES DE GARMO. Cloth. Pp. 213. $1.00.

New Geographies: First Book. By RALPH S. TARR, B.S., F.G.S.A., and FRANK M. MCMURRY, PH.D. Cloth. Illustrated. Pp. 263. $0.65.

RAND, MCNALLY & CO., CHICAGO

Old Fashioned Fairy Tales. By MARION FOSTER WASHBURNE. Cloth. Illustrated. Pp. 115. $0.45.

The Lady of the Lake. Edited by FLORUS A. BARBOUR. Cloth. Illustrated. Pp. 254.

Little Rhymes for Little Readers. By WILHELMINA SEEGMILLER. Cloth. Illustrated. Pp. 87.

CURRENT EDUCATIONAL LITERATURE IN THE PERIODICALS[1]

IRENE WARREN
Librarian, School of Education, The University of Chicago.

AGATHON. The changed spirit of the Sorbonne. Educa. R. 40:387–96. (N. '10.)

BAILEY, L. H. The place of agriculture in higher education. Educa. 31: 249–56. (D. '10.)

BONHAM, MILLEDGE L. The problem of defective pupils in the regular schools, public and private. Educa. 31:211–17. (D. '10.)

CARY, C. P. Some unfortunate tendencies among state universities. Educa. R. 40:325–33. (N. '10.)

CHAMBERS, WILL GRANT. The conversational method: its dangers; its fundamental principles. Educa. 31:169–74. (N. '10.)

COOPER, CHARLES. An American trade school for girls. School W. 12:413–15. (N. '10.)

DAVENPORT, E. The opportunity of the high school. Educa. R. 40:348–55. (N. '10.)

DAVIS, BENJAMIN MARSHALL. Agricultural education: state organizations for agriculture and Farmers' Institutes. El. School T. 11:136–45. (N. '10.)

DAVISON, ELLEN SCOTT. History in German secondary schools. Educa. R. 40:356–68. (N. '10.)

DEARBORN, GEORGE V. N. Attention: certain of its aspects and a few of its relations to physical education. Amer. Phys. Educa. Rev. 15:559–71. (N. '10.)

Educational outlook in England. Educa. R. 40:397–406. (N. '10.)

ERSKINE, JOHN. English in the college course. Educa. R. 40:340–47. (N. '10.)

Gladstone's letters to his children. Outlook 96:777–81. (3 D. '10.)

[1] *Abbreviations.*—Amer. Phys. Educa. Rev., American Physical Education Review; Atlan., Atlantic Monthly; Educa., Education; Educa. R., Educational Review; El. School T., Elementary School Teacher; Journ. of Educa., Journal of Education; Journ. of Educa. Psychol., Journal of Educational Psychology; Kind. R., Kindergarten Review; Lit. D., Literary Digest; Pop. Educator, Popular Educator; Pop. Sci. Mo., Popular Science Monthly; Primary Educa., Primary Education; Psychol. Clinic, Psychological Clinic; R. of Rs., Review of Reviews; School W., School World.

GODDARD, HENRY H. The application of educational psychology to the problems of the special class. Journ. of Educa. Psychol. 1:521–31. (N. '10.)

———. The institution for mentally defective children an unusual opportunity for scientific research. Training School (N.J.) 7:275–78. (N. '10.)

GREENWOOD, J. M. The home and school life. Educa. 31:238–43. (D. '10.)

HARTWELL, CHARLES H. Grading and promotion of pupils. Educa. R. 40:375–86. (N. '10.)

HATCH, WILLIAM E. Industrial education in Massachusetts. Educa. R. 40:369–74. (N. '10.)

HAWKINS, MASON A. Vocational education. Educa. 31:141–50. (N. '10.)

HILL, PATTY SMITH. The history of the kindergarten song in America. Kind. R. 21:193–206. (D. '10.)

HOLMES, ARTHUR. An educational experiment with troublesome adolescent boys. Psychol. Clinic 4:155–78. (N. '10.)

HUNT, CLARA WHITEHILL. Picture books for children. Outlook 96:739–45. (26 N. '10.)

HUSTON, KATHARINE WOODWARD. Elementary school ideals. Educa. 31:160–68. (N. '10.)

JOHNSTON, CHARLES. New intellectual forces at Yale. Harper's Weekly 54:11. (12 N. '10.)

JOHNSTON, CHARLES HUGHES. Naturalizing the educative process. Educa. R. 40:334–39. (N. '10.)

JONES, ERNEST. Psycho-analysis and education. Journ. of Educa. Psychol. 1:497–520. (N. '10.)

LATHROP, JOHN M. College training for business. Educa. 31:244–48. (D. '10.)

LEONARD, MARY H. The religious freedom of the schools. Educa. 31:218–23. (D. '10.)

Mental and physical factors involved in education. School W. 12:418–20. (N. '10.)

MEYERS, JESSIE G. The story of a public school child. Training School (N.J.) 7:278–80. (N.'10.)

MONTMORENCY, J. E. G. de. The medieval education of women. Journ. of Educa. (Lond.) 42:720–22. (N. '10.)

MORRELL, GRACE E. The importance of basketry in the training of defectives. Training School (N.J.) 7:280–81. (N. '10.)

NEIGHBOURS, OWEN J. Retardation in the schools and some of the causes. El. School T. 11:119–35. (N. '10.)

O'GRADY, HARDRESS. The teaching of free composition in modern foreign languages. School W. 12:408–11. (N. '10.)

O'SHEA, M. V. The origin of modern educational ideals. Primary Educa. 18:545–47. (D. '10.)

PARKER, S. CHESTER. Our inherited practice in elementary schools: Pestalozzian object-teaching and oral instruction (4). El. School T. 11: 146–55. (N. '10.)

Playground for little children, A. Outlook 96:783–84. (3 D. '10.)

PUTNAM, JAMES JACKSON. William James. Atlan. 106:835–43. (D. '10.)

ROBERT, JEANNE. A boys' and girls' republic. R. of Rs. 42:705–12. (D. '10.)

STEVENSON, JOHN J. Classics and the college course. Pop. Sci. Mo. 77: 554–60. (D. '10.)

STORR, F. Domestic science in the secondary school. School W. 12:405–8. (N. '10.)

SUPER, CHARLES W. Learning foreign languages. Pop. Sci. Mo. 77:561–69. (D. '10.)

SWETT, HARRY PREBLE. The high school pupil. Educa. 31:224–30. (D. '10.)

Traveling college for farmers. Lit. D. 41:857. (12 N. '10.)

TREUDLY, T. Dr. William T. Harris. Educa. 31:231–37. (D. '10.)

UPTON, HENRY L. Teachers' pensions. Pop. Educator 28:173–75. (D. '10.)

WHITE, FRANK MARSHALL. Making bad boys into good men. Outlook 96:711–20. (26 N. '10.)